

## Space Weather and Relativistic Electron Enhancement

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Many spacecraft failures and anomalies have been attributed to energetic electrons in the Earth's magnetosphere. While the dynamics of these electrons have been studied extensively for several decades, the fundamental question of how they are accelerated is not fully resolved. Proposed theories have not been successful in explaining fast high energy increase such as REE (Relativistic electron enhancement). In this presentation, we show observations of energetic electron precipitation measured by the Korean satellite, STSAT-1 which simultaneously detect (100eV - 20 keV) and (170 - 360 keV) energy electrons at the 680 km orbit, when the REE event observed at the geosynchronous orbit on October 13, 2004. STSAT-1 observed intense electron precipitation in both energy ranges occurred in the midnight sector clearly demonstrating that electrons having wide energy band are injected from the plasma sheet. To make the balance between loss and injection, the injected electron flux should be also large. In this situation, the injected electrons can be trapped into the magnetosphere and produce REE, though they have low e-folding energies. We propose this plasma sheet injection might be the primary source of relativistic electron (1 MeV) flux increases.